

I CLAIM:

1. A hand held dispensing device comprising:

a cylindrical housing defining a sealable chamber for receiving: a
cylindrical container of dispensable viscous fluid and a plunger
unattached to the housing for expressing the viscous fluid from the
cylindrical container, the sealable chamber extending along a
longitudinal axis and between a first end and a second end of the
housing;

a nozzle adjacent the first end of the housing, the nozzle comprising a
variable flow valve operating between a closed position and an open
position;

a hand operated first control for operating the valve between the
closed position and the open position;

a conduit for communication of a pressurized fluid with the plunger, to
move the plunger away from the second end toward the first end when
the cylindrical container and the plunger are sealed within the
chamber; and

a hand operated second control for introducing the pressurized fluid
into the conduit.

2. The dispensing device claimed in claim 1 defining a reservoir for pressurized
gas, and the conduit communicating with the reservoir.

3. The dispensing device claimed in claim 2 wherein the reservoir is a prefilled
gas cylinder.

4. The dispensing device claimed in claim 2 comprising an air valve for coupling
the reservoir with an external pressurized air supply.

5. The dispensing device claimed in claim 2 wherein the reservoir receives a prefilled gas cylinder for fluid communication with the conduit.
6. The dispensing device as claimed in claim 1, the valve operating within a range of selectable positions between the closed position and the open position.
- 5 7. The dispensing device as claimed in claim 6, the nozzle defining a channel along a second longitudinal axis for dispensing the viscous fluid, and the valve defining a spindle channel rotating about a third axis transverse to the second longitudinal axis.
8. The dispensing device as claimed 7, comprising a control element operable
10 by one hand and operatively connected to the first and second hand operated controls.
9. The dispensing device as claimed in claim 8, wherein the control element is a trigger.
10. The dispensing device as claimed in claim 6 comprising the plunger, the
15 plunger forming an annular seal positioned between the plunger and a complimentary inner wall of the housing.
11. The dispensing device as claimed in claim 10, wherein the plunger abuts against the inner wall of the housing.
12. The dispensing device as claimed in claim 11, wherein the plunger defines a
20 recess for gathering a folded wall of the container, the container defining a collapsible tube.
13. The dispensing device as claimed in claim 12, the recess defining an annular ring adjacent the periphery of the plunger.

14. The dispensing device as claimed in claim 12, the recess defining a concave surface converging at a depression on an inner wall of the plunger, adjacent the first longitudinal axis.

15. The dispensing device as claimed in claim 10, wherein the seal abuts against
5 a rigid inner wall of the container.

16. The dispensing device as claimed in claim 6, comprising a regulator for reducing an operating pressure of the pressurized fluid flowing within the conduit to a pre-selected level, the pressurized fluid being a gas.

17. The dispensing device as claimed in claim 16, wherein the pre-selected level
10 is adjustable by an operator.

18. The dispensing device as claimed in claim 6 comprising a removable chamber cap adjacent the second end, the chamber cap defining a re-closable seal for removably loading the cylindrical container into the housing.

19. In the dispensing device as claimed in claim 18, the chamber cap supports a
15 cutting tool for a preformed nozzle tip projecting from a rigid end wall of the cylindrical container.

20. In the dispensing device as claimed in claim 19, the chamber cap engages the rigid end wall of the container, to center the tool for cutting engagement with the preformed nozzle tip.

20 21. The dispensing device as claimed in claim 2, wherein the reservoir is defined by a handle grip receiving pressurized air from a hand operated pump.

22. The dispensing device as claimed in claim 21, wherein the hand operated pump is mounted on the handle grip.

23. The dispensing device as claimed in claim 22, the hand operated pump comprising a pump lever moving between a storage position adjacent the handle grip and a pumping position where the pump lever projects away from the handle grip.

24. The dispensing device as claimed in claim 2, the chamber permitting
5 pressurized gas to surround a rigid sleeve defined by the container and an exposed surface of the plunger.

25. A hand held portable caulking type gun comprising:

10 a sealable cylindrical housing extending along a first longitudinal axis and between a first dispensing end and a second end; the housing defining a sealable chamber for receiving (i) a tubular container of dispensable viscous fluid and (ii) a removable plunger for movement along the first longitudinal axis, away from the second end toward the dispensing end, to express the viscous fluid from the tubular container;

15 a nozzle assembly secured adjacent the dispensing end, for fluid communication with the tubular container, the nozzle assembly comprising a nozzle valve operating within a range of partially open positions defined between a closed position and an open position;

20 a hand operated first control for operating the valve within the range of partially open positions;

a conduit for compressed gas to communicate with the plunger, to move the plunger toward the dispensing end when the cylindrical container and the plunger are sealed within the sealable chamber; and

25 a hand operated second control for releasing the compressed gas into the conduit.

26. The caulking type gun claimed in claim 25 wherein the nozzle assembly is a first nozzle assembly detachable from the housing, for replacement with a second nozzle assembly.

27. The caulking type gun as claimed in claim 25 wherein the housing is defined
5 by a plurality of modular components comprising: an elongated sleeve extending between the dispensing end and the second end; and the nozzle assembly.

28. The caulking type gun as claimed in claim 27, the modular components further comprising a removable chamber cap defining a sealable end wall adjacent the second end.

10 29. The caulking type gun as claimed in claim 28, the modular components further comprising the plunger, the plunger defining a recess for gathering a foldable outer wall of a collapsible tubular container.

30. The caulking type gun as claimed in claim 29, the modular components further comprising a removable funnel defining a path for movement of viscous
15 material between an open end of the tubular container and an inlet to the nozzle assembly.

31. The caulking type gun as claimed in claim 28, wherein the removable chamber cap is a first chamber cap defining a first sealable chamber portion extending a first distance along the first longitudinal axis and the first chamber cap is
20 replaceable with a second removable chamber cap defining a second sealable chamber portion extending a second distance along the first longitudinal axis, the second distance being greater than the first distance.

32. The caulking type gun as claimed in claim 25, the sealable chamber allowing the compressed gas to surround: (i) a rigid sleeve defined by the container and (ii) an
25 exposed surface of the plunger, the plunger being slide fit within the rigid sleeve.

33. The caulking type gun as claimed in claim 25, the conduit being in fluid communication with a reservoir for storing the compressed gas, the reservoir being defined by a handle grip.

34. The caulking type gun as claimed in claim 33, the reservoir being a
5 removable compressed gas cartridge.

35. The caulking type gun as claimed in claim 34 comprising a regulator valve, communicating with the conduit, for controlling an operating pressure of the compressed gas flowing into the sealable chamber.

36. The caulking type gun as claimed in claim 35 comprising a relief valve for
10 exhausting the compressed gas from the sealable chamber when the operating pressure exceeds a preset limit.

37. The caulking type gun as claimed in claim 25, the first hand operated control and the second hand operated control are operatively linked by a common control element.

15 38. A portable caulking gun comprising:

a sealable tubular housing, extending along a first longitudinal axis, for receiving: (i) a tubular container of dispensable viscous fluid and (ii) a removable plunger to express the viscous fluid from the tubular container by the plunger sliding along the axis toward a first
20 dispensing end of the housing and away from a second end of the housing;

a nozzle assembly secured adjacent the dispensing end, for fluid communication with the tubular container, the nozzle assembly comprising a nozzle valve operating within a range of variable flow
25 rates;

a hand operated first control for operating the nozzle valve within the range of variable flow rates; and

a hand operated second control for introducing pressurized gas into a conduit for fluid communication with an exposed surface of the plunger when the tubular container and the plunger are sealed within the housing.

39. The caulking gun as claimed in claim 38, the housing permitting the pressurized gas to surround: (i) a rigid sleeve defined by the tubular container, and (ii) the exposed surface, to slide the plunger within the sleeve.

10 40. The caulking gun as claimed in claim 38, comprising the plunger, the plunger defining a gas tight seal around the exposed surface, to push a collapsible wall of the container toward the first dispensing end.

41. The caulking gun as claimed in claim 40, the plunger defining a recess for gathering a folded portion of the collapsible wall of the container.

15 42. The caulking gun as claimed in claim 38, wherein the first and second hand operated controls are operatively linked by a common control element.

43. The caulking gun as claimed in claim 38, wherein the nozzle assembly defines a reclosable interior tapered channel for fluid communication between the tubular container and an opening defined at a dispensing tip attached to the nozzle assembly.

44. The caulking gun as claimed in claim 43, wherein the dispensing tip is replaceable with a second dispensing tip.

45. The caulking gun as claimed in claim 38, wherein the nozzle valve comprises a spindle rotatable about an axis transverse to the longitudinal axis, the spindle defining a rotatable portion of a channel for fluid communication between the tubular container and a dispensing tip attached to the nozzle assembly.

46. The caulking gun as claimed in claim 38, wherein the first control operates the nozzle valve between an open position and a closed position at a variable rate.

47. The caulking gun as claimed in claim 38, wherein the nozzle valve comprises a rotatable valve spindle defining a channel for fluid communication between a dispensing tip and the tubular container, and the first control comprises a cam
5 operatively associated with a finger activated control, for rotation of the valve spindle at a variable rate.

48. The caulking gun as claimed in claim 38, wherein the first control comprises a biased linkage for operating the nozzle valve between an open position and a closed
10 position.

49. The caulking gun as claimed in claim 48, wherein the biased linkage comprises a spring for urging the nozzle valve toward the closed position.

50. The caulking gun as claimed in claim 46, wherein the first control comprises a flexible member operatively connecting a finger activated control to the nozzle valve.

15 51. The caulking gun as claimed in claim 38, comprising a reservoir for storing the pressurized gas.

52. The caulking gun as claimed in claim 51, wherein the reservoir is a replaceable storage cylinder.

53. The caulking gun as claimed in claim 51, wherein the reservoir comprises a storage compartment for pressurized gas defined by the housing.
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54. The caulking gun as claimed in claim 53, wherein the housing is replaceable with a second housing.

55. The caulking gun as claimed in claim 38, wherein the housing is replaceable with a second housing.

56. The caulking gun as claimed in claim 55, wherein the second housing defines an extendable sleeve for receiving the tubular container.

57. The caulking gun as claimed in claim 51, wherein the reservoir receives pressurized gas from a hand operated pump.

5 58. The caulking gun as claimed in claim 57, comprising the hand operated pump.

59. The caulking gun as claimed in claim 52, comprising a regulator for reducing an operating pressure of the pressurized gas flowing into the conduit.

60. The caulking gun as claimed in claim 38, comprising a relief valve for
10 exhausting the pressurized gas away from the exposed surface of the plunger.

61. The caulking gun as claimed in claim 60, the relief valve operating between:
(i) a first position allowing the pressurized gas to communicate with the exposed
surface; (ii) a second position for exhausting the pressurized gas by operator
activation; and (iii) a third position for exhausting the pressurized gas when an
15 operating pressure of the gas exceeds a predetermined pressure level.

62. The caulking gun as claimed in claim 61, wherein the relief valve is biased toward the first position.

63. The caulking gun as claimed in claim 62, the relief valve comprising a
deformable seal for releasing the relief valve from the first position to the third
20 position.

64. The caulking gun as claimed in claim 51, wherein the first control and the
second control are operatively connected with a common control element for
simultaneously closing fluid communication of the pressurized gas into the conduit
and closing the nozzle valve to prevent expression of the viscous fluid via the nozzle
25 assembly.

65. The caulking gun as claimed in claim 64, comprising a relief valve for exhausting the pressurized gas away from the exposed surface of the plunger, the relief valve operating between: (i) a first position allowing the pressurized gas to communicate with the exposed surface; (ii) a second position for exhausting the pressurized gas by operator activation; and (iii) a third position for exhausting the pressurized gas when an operating pressure of the gas exceeds a predetermined pressure level.

66. A kit for use in a portable gas powered caulking gun having a sealable tubular housing in fluid communication with a source for pressurized gas and a nozzle assembly for dispensing a viscous fluid from within the tubular housing, the kit comprising:

a collapsible tubular container for the viscous fluid, having a first end defining a sealed opening and an opposing closed end, for insertion into the tubular housing so that, when the first end is opened, the first end is positioned adjacent the nozzle assembly;

a funnel for insertion into the tubular housing intermediate the nozzle assembly and the collapsible tubular container, to provide a sealable communication path between the first end and the nozzle assembly;

a plunger for slidable engagement within the tubular housing adjacent the closed end of the collapsible tubular container to form a moving seal between the source for pressurized gas and the collapsible tubular container.

67. The kit claimed in claim 66, the plunger defining a cap having a recess to receive a crimped seal at the closed end of the collapsible tubular container.

68. The kit claimed in claim 67, the cap having a second recess for receiving a folded portion of a collapsible wall of the tubular container when a portion of the viscous fluid is dispensed from within the caulking gun.

69. The kit claimed in claim 67, wherein the recess receives a folded portion of a collapsible wall of the tubular container when a portion of the viscous fluid is dispensed from within the caulking gun.

70. A portable caulking gun comprising:

5 a sealable tubular housing, extending along a first longitudinal axis,
 between a dispensing end and an opposing end, for receiving a
 coaxially aligned tubular container of dispensable viscous fluid;

 a nozzle assembly adjacent the dispensing end, for viscous fluid
 communication with the tubular container, the nozzle assembly
10 comprising a nozzle valve operating between an open position and a
 closed position;

 a control for operating the nozzle valve between the open and closed
 positions;

 a reservoir for storing compressed air received from a hand operated
15 air pump; and

 a conduit for communication of the compressed air between the
 reservoir and the housing to express the viscous fluid from within the
 housing.

71. The caulking gun as claimed in claim 70 comprising the air pump.

20 72. The caulking gun as claimed in claim 70, the housing permitting the
 compressed air to surround: (i) a rigid sleeve defined by the tubular container,
 and (ii) an exposed surface of a slidable plunger within the sleeve.

73. The caulking gun as claimed in claim 70, comprising a plunger forming a gas
tight seal around the exposed surface, to push a collapsible wall of the tubular
25 container toward the dispensing end.

74. The caulking gun as claimed in claim 73, the plunger defining a recess for gathering a folded portion of the collapsible wall of the tubular container.
75. The caulking gun as claimed in claim 74, wherein the recess receives a crimped seal at a closed end of the tubular container.
- 5 76. The caulking gun as claimed in claim 70, wherein the nozzle valve operates within a variable range of openings between the open and closed positions.
77. The caulking gun as claimed in claim 76, wherein the nozzle valve comprises a rotatable valve spindle defining a channel for viscous fluid communication between the tubular container and a dispensing tip adjacent the dispensing end.
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